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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/687,246  | 10/16/2003  | Charles Jay Alpert   | AUS920030652US1     | 9400             |
| 7590 10/19/2005   |             |                      | EXAMINER            |                  |
| Jack V. Musgrove<br>2911 Briona Wood Lane<br>Cedar Park, TX 78613 |             |                      | SIEK, VUTHE         |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2825                |                  |

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/687,246 | <b>Applicant(s)</b><br>ALPERT ET AL. |  |
|                              | <b>Examiner</b><br>Vuthe Siek        | <b>Art Unit</b><br>2825              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6,8,13,15 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,8,13,15 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This office action is in response to application 10/687,246 and amendment filed on 8/1/2005. Claims 1, 6, 8, 13, 15 and 20 remain pending in the application.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 6, 8, 13, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art (AAPA).

4. As to claims 1, 6, 8, 13, 15 and 20, Applicant admitted that a method for designing a layout of IC using a conjugate gradient placement algorithm (CG) is known and using successive over-relaxation (SOR) placement is also known (see pages 1-4, page 9, lines 28-29). It is well known to practitioners in the art in order to design a layout of an IC design it begins with initial placement in an initial region, followed by partitioning and then by placement refinement. The process of partitioning and placement refinement will be repeated in order to optimize cell placement to meet design constraints. From these teachings, it would have been obvious practitioners in the art to utilize both of the conjugate gradient placement algorithm during initial placement in an initial region; then followed by partitioning and placement refinement, utilizing a successive over-relaxed placement algorithm in order to optimize cell

placement to meet design requirements to thereby obtaining a timing delay, area and power requirements as expected.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 6, 8, 13, 15 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Sarrafzadeh et al. (6,851, 099).

7. As to claims 1, 8 and 15, Sarrafzadeh et al. teach a computer-implemented method and a computer system for designing a layout of an integrated circuit (IC) comprising initial placement (topo-clusters drive initial placement with all of the gates of a topo-cluster being placement initially in a single bin of the placement layout or within a group of positionally-related bins (see abstract, summary; col. 5 lines 5-24) and followed placement refinement (successive over-relaxation placement algorithm). Placement refinement is performed iteratively, each iteration involving quadrisect ion followed by a variant of FM, refereed to as Dual GBFM (see abstract, summary; col. 5 lines 25-51). Fig. 5 shows quadrisect ion process. Fig. 6-7 show placement process including initial placement (gradient placement), followed by quadrisect ion and placement iteration (successive over-relaxation placement). Fig. 11-13 show initial placement (gradient

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placement) and Fig. 15-18 show quadrisection (partitioning) and iterative placement refinement (also see Fig. 20-25). Accordingly, Sarrafsadeh et al. anticipated the claimed limitations.

8. As to claims 6, 13 and 20, Sarrafzadeh et al. teach quadratic placement which includes initial placement and successive placement refinement using quadratic technique (GBFM) (at least see col. 5-6). Fig. 5 shows quadrisection process. Fig. 6-7 show placement process including initial placement (gradient placement), followed by quadrisection and placement iteration (successive over-relaxation placement). Fig. 11-13 show initial placement (gradient placement) and Fig. 15-18 show quadrisection (partitioning) and iterative placement refinement. Accordingly, Sarrafsadeh et al. anticipated the claimed limitations.

#### ***Remarks***

9. First, Examiner thank Applicants for detailed comments. Applicants argued that Sarrafzadeh et al. do not teach both algorithms (gradient and successive over-relaxation placement algorithms as claimed. Examiner disagrees. Sarrafzadeh et al. teach both placement algorithms. The first placement called initial placement algorithm, followed by partitioning using GBFM technique and iterative placement refinement (successive over-relaxation placement). The names of placement algorithms as taught by Sarrafzadeh et al. may be different as those recited in the claims, but the function of these placement algorithms are the same. Therefore, Sarrafzadeh et al. teachings anticipated the claimed limitations. In addition, the current claims are also obvious to practitioners in the art over applicant admitted prior art. There is no improvement over

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the prior art placement techniques. GBFM technique partition an IC design as in the instant application, where an IC first partitioning into two or four subregions, and each of the subregions is further partitioning into four sub subregions, thus obtaining a total of sixteen subregions (see Fig. 5 as an example). The process of partitioning using GBFM technique is repeated as required by smaller number cells. Thus, the partitioning as taught by Sarrafzadeh et al. results in four, sixteen regions, so forth as in the instant application.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vuthe Siek whose telephone number is (571) 272-1906. The examiner can normally be reached on Increase Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vuthe Siek



**VUTHE SIEK**  
**PRIMARY EXAMINER**